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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,176	09/28/2001	Elrick Lennaert Cornelius	47161-00026USPT	5504

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EXAMINER

LAO, LUN S

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 08/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,176

Applicant(s)

CORNELIUS ET AL.

Examiner

Lun-See Lao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Introduction

1. This action responds to amendment filed on 07-14-2003. Claims 1-58 are pending and selected claims 1-51 and claims 52-58 have been cancelled, without traverse

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 41 and 43 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The driven "at least one aperture is exactly two apertures (claim 41)" and "at least one aperture is exactly four apertures (claim 43)" (see page 10 and figs.1-6) was not supported in the further detail in the specification nor in any of claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Holesha (UA PAT. 5,319,717).

Consider claim 1, Holesha teaches a microphone for converting sound into an audio signal, comprising:

- a housing (see fig.1, 12) defining an inner volume;
- a diaphragm (24) dividing said inner volume into a front volume (26) and a rear volume (26), said diaphragm undergoing movement in response to said sound;
- a damping element (24) positioned against said diaphragm; and
- a backplate (30) positioned in said rear volume adjacent said damping element to define an aperture bounded by a portion of said backplate and a portion of said damping element, said aperture causing the frequency response curve of said microphone to be dampened (see col.3 line 1-45).

6. Claims 1-6, 8-11, 14-23, 25 and 27-43 and 45-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Murphy (US PAT. 4,764,690).

Consider claim 1, Murphy teaches a microphone for converting sound into an audio signal, comprising:

- a housing (see fig.1, 12) defining an inner volume;
- a diaphragm (16) dividing said inner volume into a front volume (54) and a rear volume (52), said diaphragm undergoing movement in response to said sound;
- a damping element (20, (the micron-thick spacer ring puts the tension on the diaphragm)) positioned against said diaphragm (18); and

a backplate (22,24) positioned in said rear volume adjacent said damping element (20) to define an aperture bounded by a portion of said backplate (22,24) and a portion of said damping element (20, (the micron-thick spacer ring puts the tension on the diaphragm)), said aperture inherently causing the frequency response curve of said microphone to be dampened (see col.2 line 38-56).

Consider claims 3-6, Murphy teaches the microphone of the housing includes a floor (see fig.1, 12), said diaphragm (18) including a membrane frame (16) and a membrane (18) disposed across a surface of said membrane frame (16), said membrane frame contacting said floor (see fig.1); and the microphone of the damping element (24,22) has an outer perimeter, said damping element having a clamping member (62) formed along said outer perimeter and contacting an inner portion of said housing (12), said clamping member (62) holding said spacer in a fixed position within said housing; and the microphone of the damping element (20) includes an opening, said opening being dimensioned to hold said backplate (22,24) within said opening; and the microphone of the backplate (22,24) includes a bottom surface (20) opposing said diaphragm (18), said bottom surface having at least one standoff disposed thereon, said at least one standoff contacting said diaphragm (see fig.1, (18)), and the microphone of the backplate (see fig.1 (22,24)) is positioned to define at least two apertures bounded by portions of said backplate (22,24) and portions of said damping element (20), said at least two apertures causing the movement of said diaphragm (20) to be affected in response to said sound (see Col.1 line 40-col.3 line 20).

Consider claims 8-11, Murphy teaches the microphone of the housing includes a bottom surface having at least one support member (see fig.1 (16)), said diaphragm (18) being mounted on said at least one support member (16); and the microphone of the support member (30) is an embossment formed by deforming said housing to create a protrusion extending into said inner volume of said housing (12); and the microphone of the bottom surface of said housing (see fig.1 (12)) includes at least three support members (30,42,16); and the microphone of the diaphragm (see fig.1, (18)) includes an approximately pressure vent for equalizing pressure between (18, diaphragm's chambers) said front volume (54) and said rear volume (52).

Consider claims 14-15, Murphy teaches the microphone of the backplate (see fig.1 (22, 24) has a charged surface opposing said diaphragm (18); and the microphone of the charged surface is Teflon (see col.1 line 55-63).

Consider claim 16, Murphy teaches the microphone of thickness of the damping element (20 (the micron-thick spacer ring puts the tension on the diaphragm)) most preferably greater than 40 microns (see col.1 lines 55-63), therefore it meets limitation of claim 16 (at least about 125 microns).

Consider claims 17-21, Murphy teaches the microphone of the thickness of said damping element is at least about 50 microns (see col.1 lines 55-63); and the microphone of the thickness of the damping element is less than about 37.5 microns (see col.1 lines 55-63) and the microphone of the damping element is between about 37.5 microns and about 50 microns (see col.1 lines 55-65); and the microphone of the

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thickness of said damping element is about 35 microns (see col.1 lines 55-63); and the microphone of the front volume (see fig.1 (54)) lacks structure for dampening the frequency response curve of said microphone (see col.2 line 37-55).

Consider claims 22-23, Murphy teaches the microphone of the damping element (see fig.1 (20))(the micron-thick spacer ring puts the tension on the diaphragm) serves as a spacer to maintain a predetermined distance between said diaphragm (18) and said backplate (22,24); and the microphone of the diaphragm (see fig.1 (18)) is dimensioned to prevent debris from entering said rear volume (52).

Consider claim 25 Murphy teaches a microphone comprising:

a cartridge (see fig.1 (12)) including a membrane (diaphragm (18)), a membrane frame ((16) it holds the diaphragm), a damping frame ((20) the micro-thick space ring puts the tension on the diaphragm), and a backplate (22,24), said membrane being disposed across a surface of said membrane frame (see fig.2, 16)), said damping frame (20) opposing said membrane frame (16) and defining an opening having an inner edge, said backplate (22,24) opposing said damping frame (20)(the micron-thick spacer ring puts the tension on the diaphragm) and defining an aperture bounded by a portion of an outer edge of said backplate (22,24) and a portion of said inner edge of said damping frame (20)(the micron-thick spacer ring puts the tension on the diaphragm), wherein said aperture is dimensioned to dampen a frequency inherently response curve of said microphone (see col.2 line 37-col.3 line28).

Consider claim 27, Murphy teaches the microphone of thickness of the damping element (20 (the micron-thick spacer ring puts the tension on the diaphragm)) most preferably greater than 40 microns (see col.1 lines 55-63), therefore it meets limitation of claim 27 (about 125 microns).

Consider claims 28-30, Murphy teaches the microphone of the damping frame (spacer, 20) has a thickness of about 50 microns (see col.1 lines 55-62); and the microphone of the damping frame (20) is positioned away from said diaphragm (18) inherently by a distance to achieve squeezed film damping (22 and see fig.2); and the microphone of the backplate (22,24) is secured to said damping element with adhesive (see fig.4a and col.3 lines 5-27).

Consider claims 31-33, Murphy teaches the microphone of the positioning of said damping element (see fig.1 (20)) against said backplate (22,24) inherently defines a first aperture opposite a second aperture, said first aperture being bounded by a first edge portion of said damping element (20)(the micron-thick spacer ring puts the tension on the diaphragm)) and a first edge portion of said backplate (22,24), said second aperture being bounded by a second edge portion of said damping element (20) and a second edge portion of said backplate (22,24)(see col3 line 30-53); and the microphone of first aperture (see fig.1, (22)) and said second aperture (24) have substantially the same dimensions; and the microphone of the damping element (see fig.1, (22,24)) includes at least one clamping member (62) disposed along an outer edge of said damping element

(22,24), said clamping member (62) contacting said housing (12) to secure said damping element within said housing (12 and see col.3 line 5-28).

Consider claim 34, Murphy teaches a microphone comprising:

a diaphragm (see fig.1, (18)) having a membrane frame (16) and a membrane (diaphragm (18)) disposed across a surface of said membrane frame (16), said membrane (18) defining a front volume (54) and a rear volume (52) in said microphone;

a damping frame (20)(the micron-thick spacer ring puts the tension on the diaphragm)) positioned in said rear volume (52) and against said membrane (diaphragm (18)), said damping frame (20) having an inner surface defining an opening; and

a backplate (22,24) positioned adjacent said damping frame (20) and defining an aperture bounded by a portion of said backplate (22,24) and a portion of said inner surface of said damping frame (20)(the micron-thick spacer ring puts the tension on the diaphragm), said aperture inherently being dimensioned to dampen a frequency response curve of said microphone (see col.3 lines 30-53).

Consider claims 35-37 Murphy teaches the microphone of the backplate (fig.1, (22,24)) is mounted on said damping frame (20)(the micron-thick spacer ring puts the tension on the diaphragm) (20 and see fig.4a); and the microphone of the backplate (22,24) is positioned within said damping frame (20)(the micron-thick spacer ring puts the tension on the diaphragm) (20 and see fig.4a); and the microphone of the membrane (see fig.1, (18) diaphragm) comprises an approximately pressure vent for equalizing pressure between (18, diaphragm's chambers (54,52) said front volume (54)) and said rear volume (52)(see col.3line 5-28) said front volume and said rear volume.

Consider claim 38, Murphy teaches a microphone comprising:

a diaphragm (see fig.1 (18));

a backplate (22,24) opposing said diaphragm (18);

a spacer (20) element for maintaining an appropriate spacing between said diaphragm (18) and said backplate (22,24)(see col.1 lines 55-62);

a housing (see fig.2, 12) having first, second, and third interacting sound chambers, said first sound chamber being substantially defined by walls of said housing (12) and said diaphragm (18), said second sound chamber being substantially defined by said diaphragm (18), said backplate (22, 24), and said spacer (20), said third sound chamber being substantially defined by said backplate (22,24) and walls of said housing (12); at least one aperture defined by at least one of said backplate (22,24) and said spacer element (20), said aperture connecting said second and third sound chambers and inherently having selected dimensional characteristics for dampening a frequency response curve for said microphone (see col.3 lines 5-55).

Consider claims 39-41 Murphy teaches the microphone of the relative size of said sound chambers in increasing order from smallest to largest is said second sound chamber, said first sound chamber, and said third sound chamber (see fig.1 and fig.2); and at least one aperture is exactly one aperture (see fig.1, (20)); and at least one aperture is exactly two (three) apertures (16).

Consider claims 42-43 and 45-46 Murphy teaches the microphone at the least one aperture is at least two apertures (see fig.1, (22,24)); and at least one aperture is exactly four (six) apertures (22,24); and least one aperture (20) has a thickness of at

least about 50 microns (see col.1 lines 55-63); and at least one aperture has an approximately thickness of less than about 37.5 microns (see col.1 lines 55-63).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (US PAT 4,764,690) in view of Van Halteren (US PAT 5,255,246).

Consider claims 12-13, Murphy does not teach the microphone of the damping element is made of a polyimide material; and the microphone of the damping element is made of Kapton.

However, Van Halteren teaches the microphone of the damping element is made of a polyimide material (SiO₂)(see col.4 lines 36-45); and the microphone of the damping element is made of Kapton (see col.4 line 45-59).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Murphy in to Van Halteren to provide a transducer in which the parasitic capacitance mentioned no longer has any influence whatsoever on the transfer characteristic of the transducer, whilst the other parasitic

capacitances are also minimized, and which transducer can moreover be fabricated in a considerably simpler manner.

9. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (US PAT 4,764,690) in view of Christensen (US PAT 3,013,127).

Consider claim 44, Murphy does not teach the microphone at least one aperture has a length of about 0.5 mm and a width of about 0.5 mm.

However, Christensen teach the microphone at least one aperture has a length of about 0.5 mm and a width of about 0.5 mm (approximately .035 x .035 inch) (see col.5 line 13-25).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Murphy in to Christensen to provide a new and improved sound-transducing apparatus.

10. Claims 7, 24, 26 and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (US PAT 4,764,690).

Consider claims 48, Murphy teaches a microphone comprising:

a diaphragm (see fig.1, (18)) capable of movement in response to an acoustical signal;

a backplate (22,24) opposing said diaphragm, said movement of said diaphragm relative to said

backplate (22,24) causing an audio signal corresponding to said acoustical signal (see col.3 lines 30-53);

a spacer element (20) for maintaining an appropriate spacing between said diaphragm (18) and said backplate (22,24 and see col.1 lines 40-63);

a front volume (54) on one side of said diaphragm (18) for transmitting said acoustical signal to said diaphragm (18); and

a rear volume (52) on the other side of said diaphragm (18), said rear volume (52) including a small region between said backplate (22,24) and said diaphragm (18) and a large region adjacent to said small region, said small region and said large region being connected by at least one aperture (see fig.2 and col.3 lines 30-63)), but Murphy does not teaches an aperture being dimensioned to provide dampening of a frequency response curve for acoustical signals in the range from about 2 kHz to about 10 kHz.

However, Murphy does indicated the higher frequency in the diaphragm's region and it well known that human hearing frequency range from 20hz-20khz and therefore it would have been obvious that Murphy uses such as frequency range from about 2 kHz to about 10 kHz for hearing aid microphone.

Consider claims 49-51, Murphy teaches the microphone of the aperture is defined entirely by said spacer element (see fig.1, (20) and col.3 line30-55); and the microphone of the aperture is defined by said spacer (20)(see col.3 lines 30-55) and said backplate (22,24); and the microphone of the aperture is defined entirely by said backplate (22,24 and see col.3 lines 30-55).

Consider claims 7, 24 and 47 Murphy does not teach the microphone at least two apertures dampens the frequency response curve of said microphone at a range of about 2 kHz to about 10 kHz.

However, Murphy does indicated the higher frequency in the diaphragm's region and it is well known that human hearing frequency range from 20hz-20khz and therefore it would have been obvious that Murphy uses such as frequency range from about 2 kHz to about 10 kHz for hearing aid microphone.

Consider claim 26, Murphy does not teach the microphone of the cartridge has a thickness of about 300 microns. However, it is well known to select different sizes of cartridge and therefore it would been obvious that Murphy selects a size such as about 300 microns thickness of cartridge for friendly using.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Collins (US PAT 6,532,293) is cited to show other related to microphone for a hearing aid or listening device with improved internal damping and foreign material protection.

12. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9314


Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259. The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259)


DUC NGUYEN
PRIMARY EXAMINER